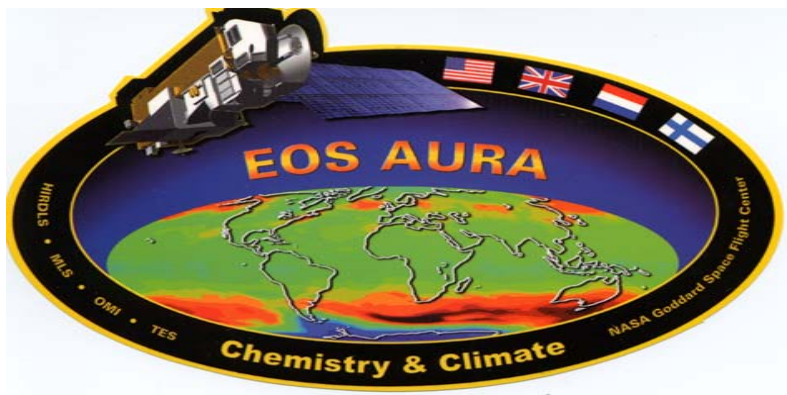
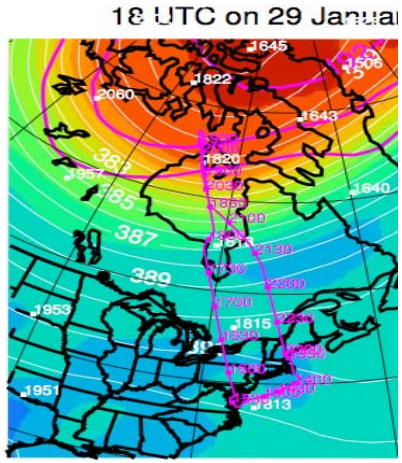
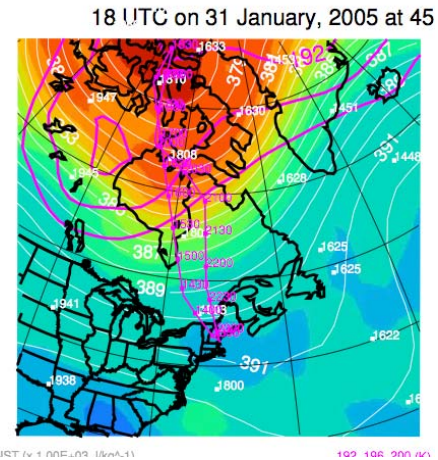
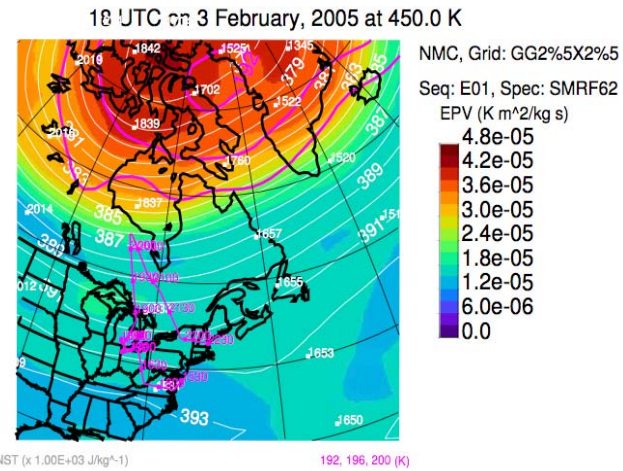
Ozone observations during the Polar Aura Validation Experiment (PAVE) in January-February, 2005

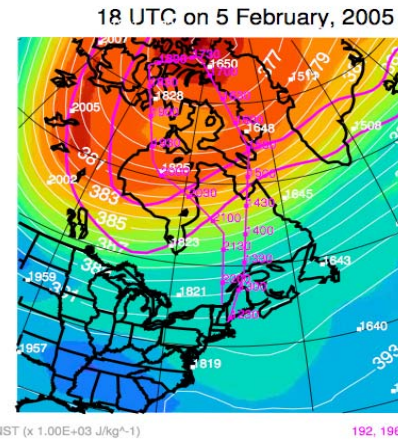
Michael T. Coffey and James W. Hannigan
National Center for Atmospheric Research

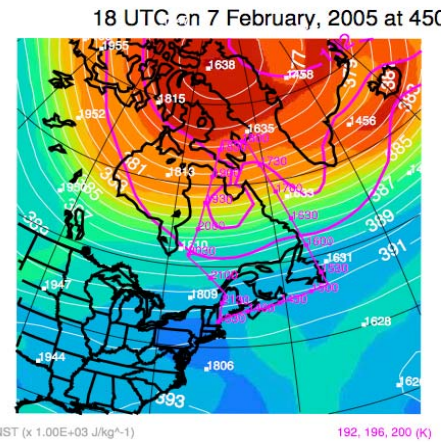


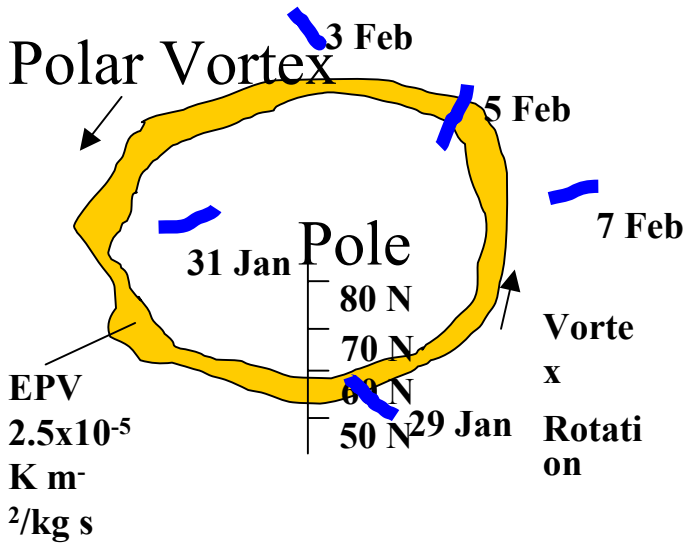

18 UTC on 29 Januar


18 UTC on 31 January, 2005 at 45


18 UTC on 3 February, 2005 at 450.0 K
NMC, Grid: GG2%5X2%5
Seq: E01, Spec: SMRF62
EPV (K m^2/kg s)
4.8e-05
4.2e-05
3.6e-05
3.0e-05
2.4e-05
1.8e-05
1.2e-05
6.0e-06
0.0
MNST (x 1.00E+03 J/kg^-1)
192, 196, 200 (K)

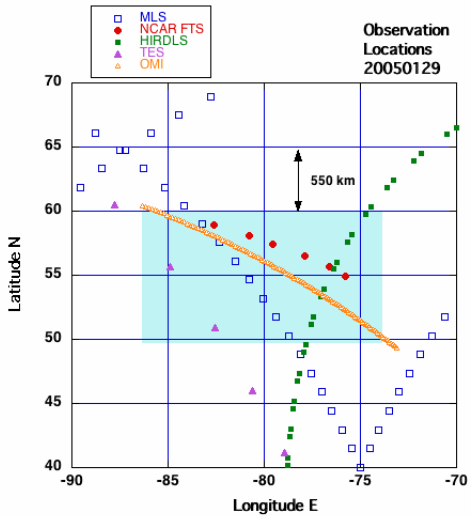

18 UTC on 5 February, 2005
MNST (x 1.00E+03 J/kg^-1)

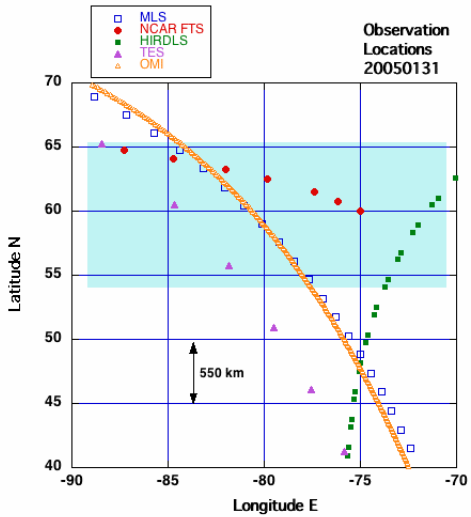

18 UTC on 7 February, 2005 at 450
MNST (x 1.00E+03 J/kg^-1)
192, 196, 200 (K)

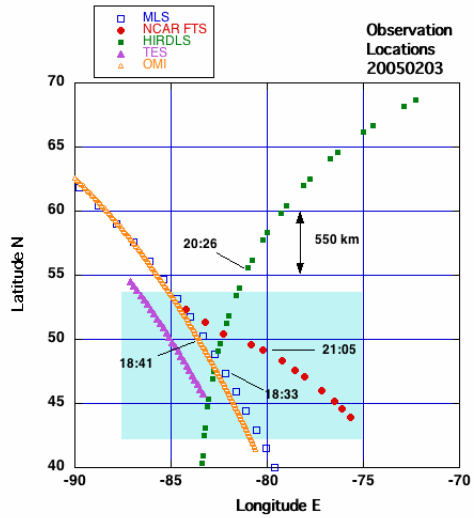

Polar Vortex
3 Feb
5 Feb
7 Feb
31 Jan
Pole
80 N
70 N
50 N
29 Jan
Vortex Rotation
EPV
2.5x10-5
K m-
2/kg s

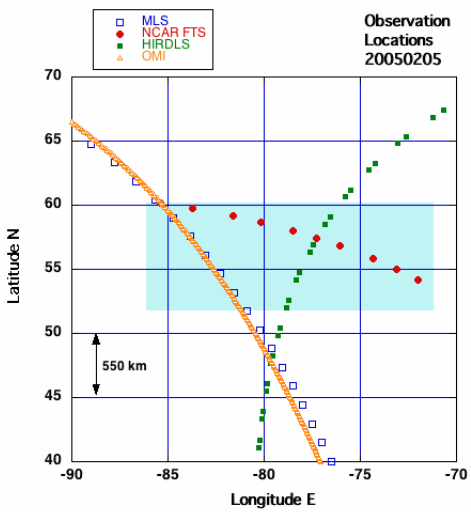
Ozone Observations aboard the DC-8

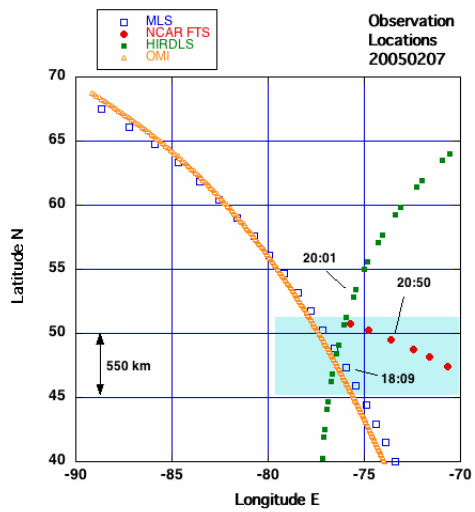
Observation	Institution	PI	ID
Insitu O_3	NASA LaRC	Avery	O3
LIDAR	NASA LaRC	Browell	DI
IR abs FTS	NCAR	Coffey	IR
LIDAR	NASA GSFC	McGee	AR
Sub-mm emiss spect.	U. of Bremen	Notholt	AS
Actinic flux spect.	CU/NCAR	Petropavlovskikh	PO

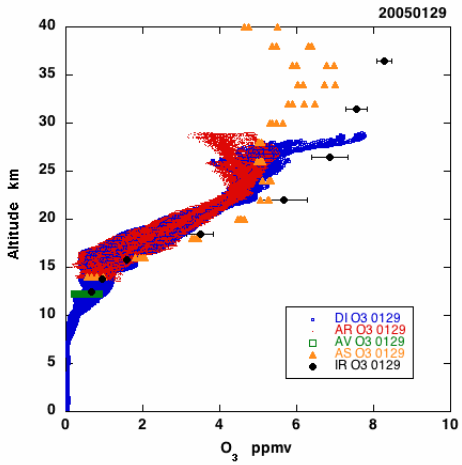

MLS
NCAR FTS
HIRDLS
TES
OMI
Observation Locations 20050129
550 km
Latitude N
Longitude E

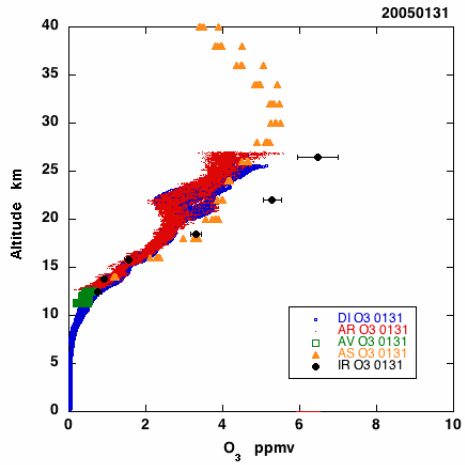

MLS
NCAR FTS
HIRDLS
TES
OMI
Observation Locations 20050131
550 km
Latitude N
Longitude E

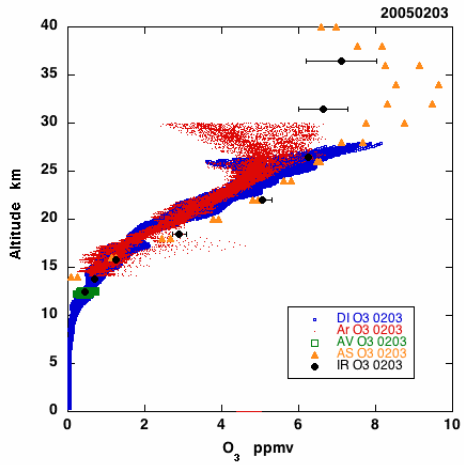

MLS
NCAR FTS
HIRDLS
TES
OMI
Observation Locations 20050203
20:26
550 km
18:41
21:05
18:33
Latitude N
Longitude E

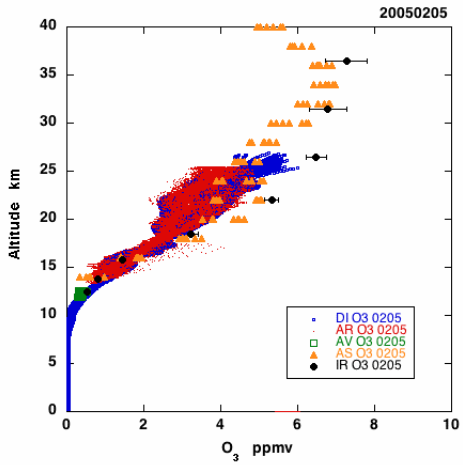

MLS
NCAR FTS
HIRDLS
OMI
Observation Locations 20050205
550 km
Latitude N
Longitude E

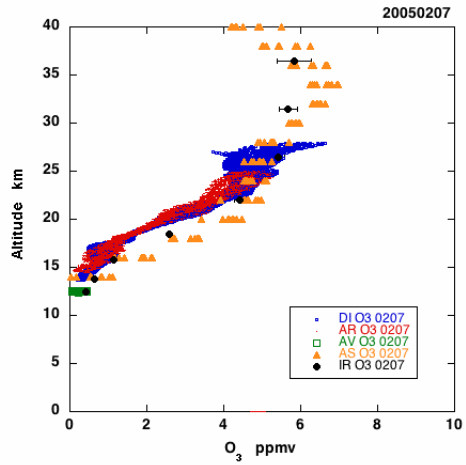

MLS
NCAR FTS
HIRDLS
OMI
Observation Locations 20050207
20:01
20:50
550 km
18:09
Latitude N
Longitude E

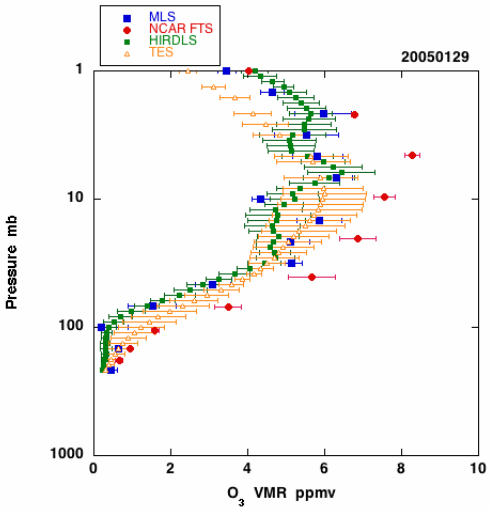

20050129
Altitude km
O_3 ppmv
DI O3 0129
AR O3 0129
AV O3 0129
AS O3 0129
IR O3 0129

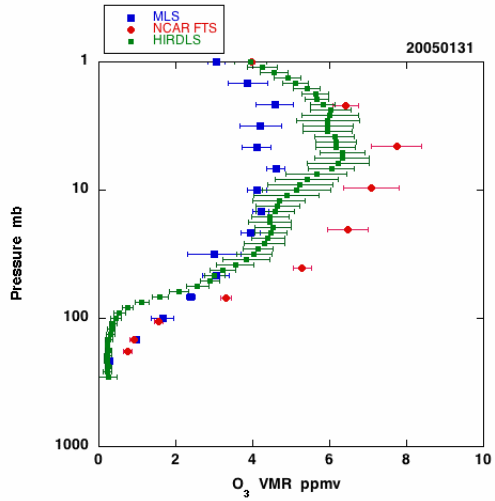

20050131
Altitude km
O_3 ppmv
DI O3 0131
AR O3 0131
AV O3 0131
AS O3 0131
IR O3 0131

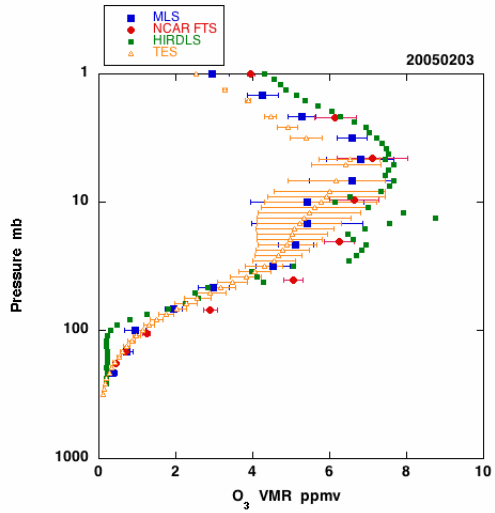

20050203
Altitude km
O_3 ppmv
DI O3 0203
Ar O3 0203
AV O3 0203
AS O3 0203
IR O3 0203

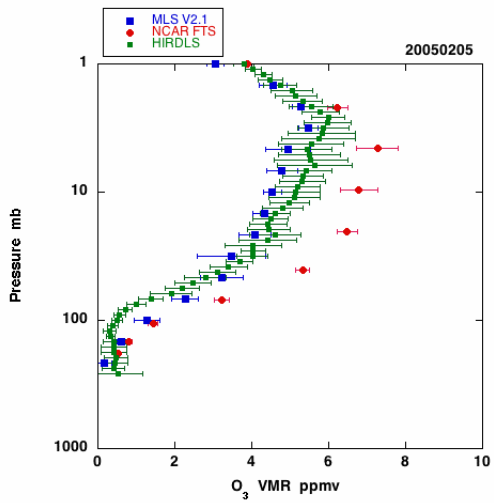

20050205
Altitude km
O_3 ppmv
DI O3 0205
AR O3 0205
AV O3 0205
AS O3 0205
IR O3 0205

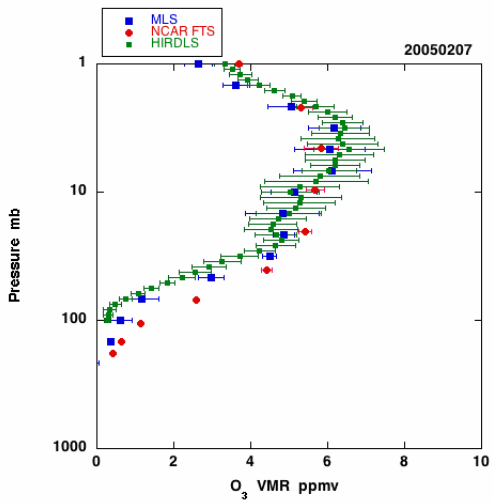

20050207
Altitude km
O_3 ppmv
DI O3 0207
AR O3 0207
AV O3 0207
AS O3 0207
IR O3 0207

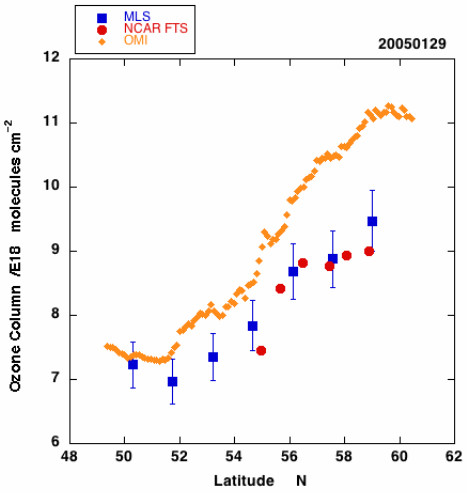

MLS
NCAR FTS
HIRDLS
TES
20050129
Pressure mb
1
10
100
1000
0
2
4
6
8
10
O3 VMR ppmv

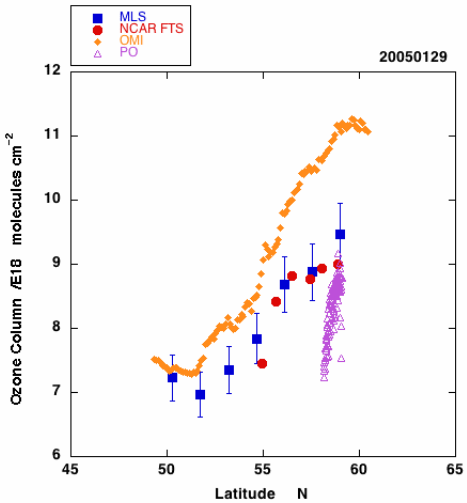

MLS
NCAR FTS
HIRDLS
20050131
Pressure mb
1
10
100
1000
0
2
4
6
8
10
O3 VMR ppmv

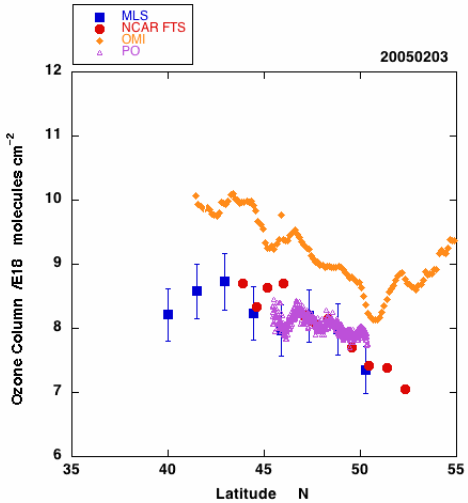

MLS
NCAR FTS
HIRDLS
TES
20050203
Pressure mb
1
10
100
1000
0
2
4
6
8
10
O3 VMR ppmv

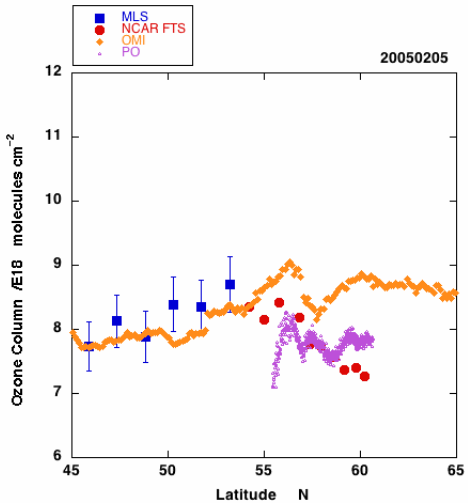

MLS V2.1
NCAR FTS
HIRDLS
20050205
Pressure mb
1
10
100
1000
0
2
4
6
8
10
O3 VMR ppmv

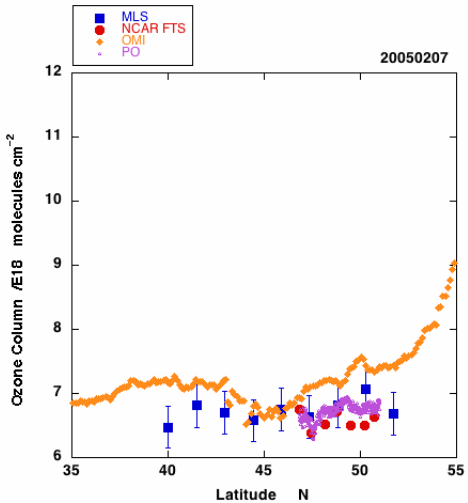

MLS
NCAR FTS
HIRDLS
20050207
Pressure mb
1
10
100
1000
0
2
4
6
8
10
O3 VMR ppmv

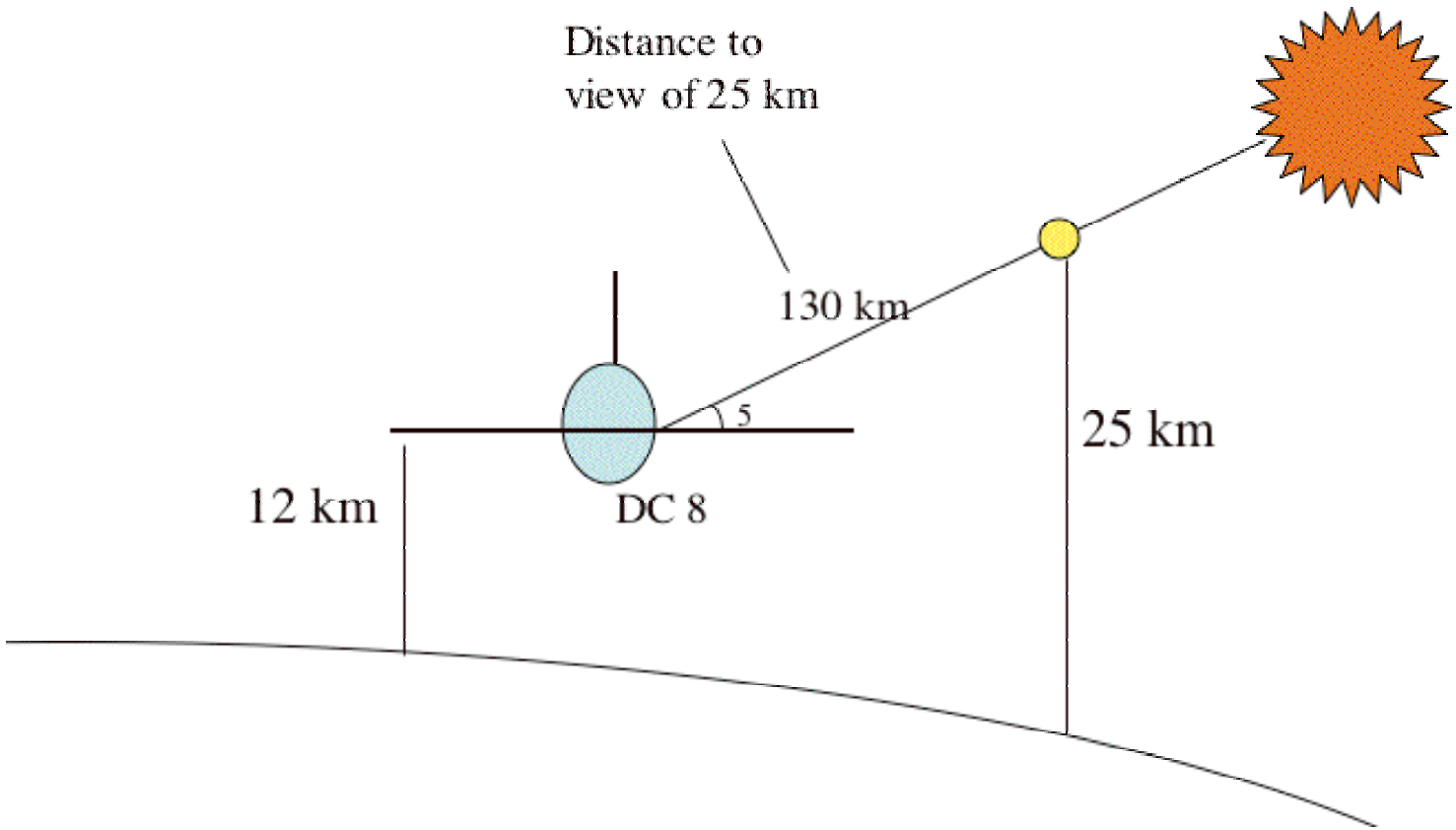

MLS
NCAR FTS
OMI
20050129
Ozone Column /E18 molecules cm^{-2}
Latitude N


MLS
NCAR FTS
OMI
PO
20050129
Ozone Column /E18 molecules cm^{-2}
Latitude N

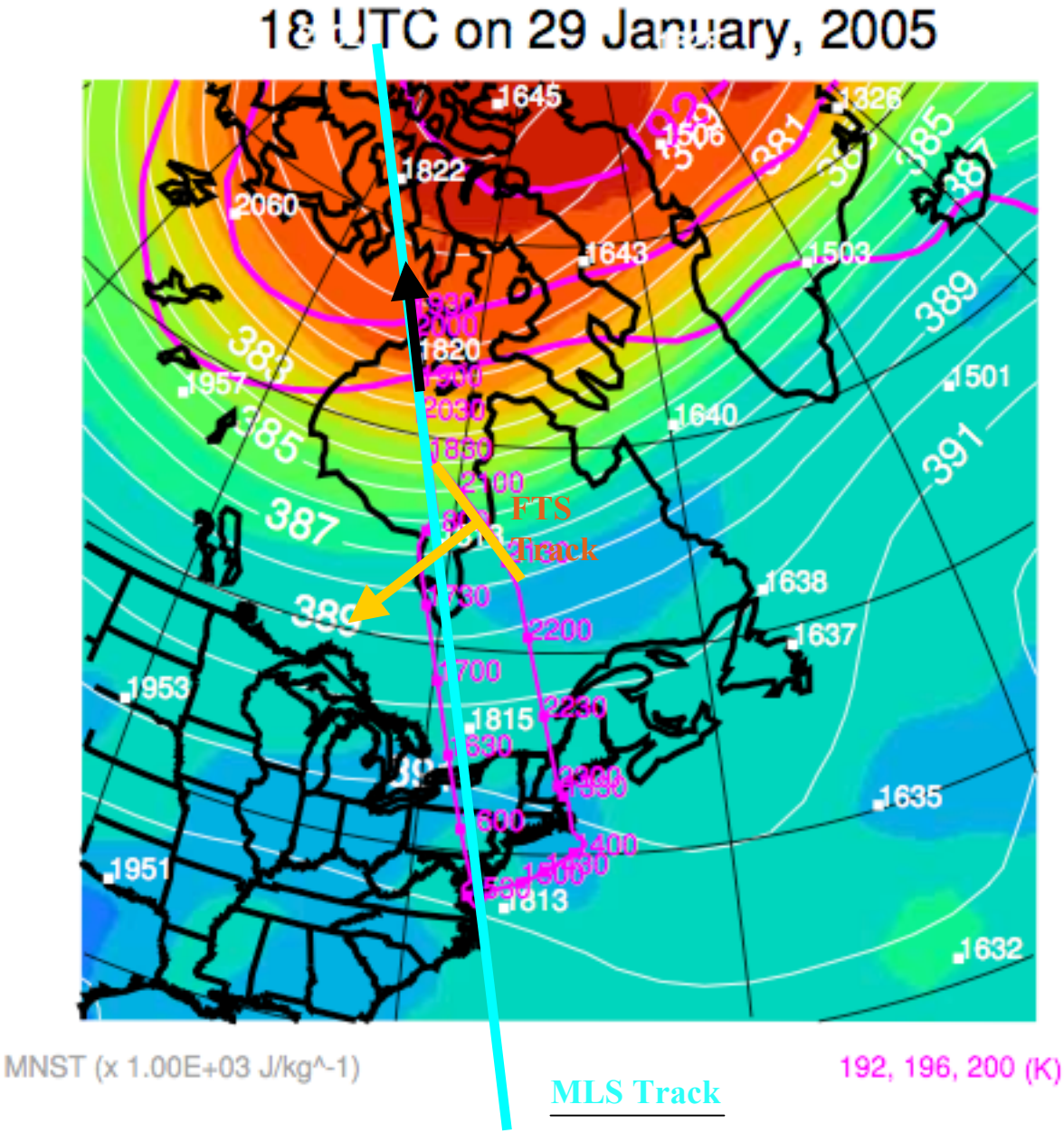

MLS
NCAR FTS
OMI
PO
20050203
Ozone Column /E18 molecules cm^{-2}
Latitude N


MLS
NCAR FTS
OMI
PO
20050205
Ozone Column /E18 molecules cm^{-2}
Latitude N


MLS
NCAR FTS
OMI
PO
20050207
Ozone Column /E18 molecules cm^{-2}
Latitude N



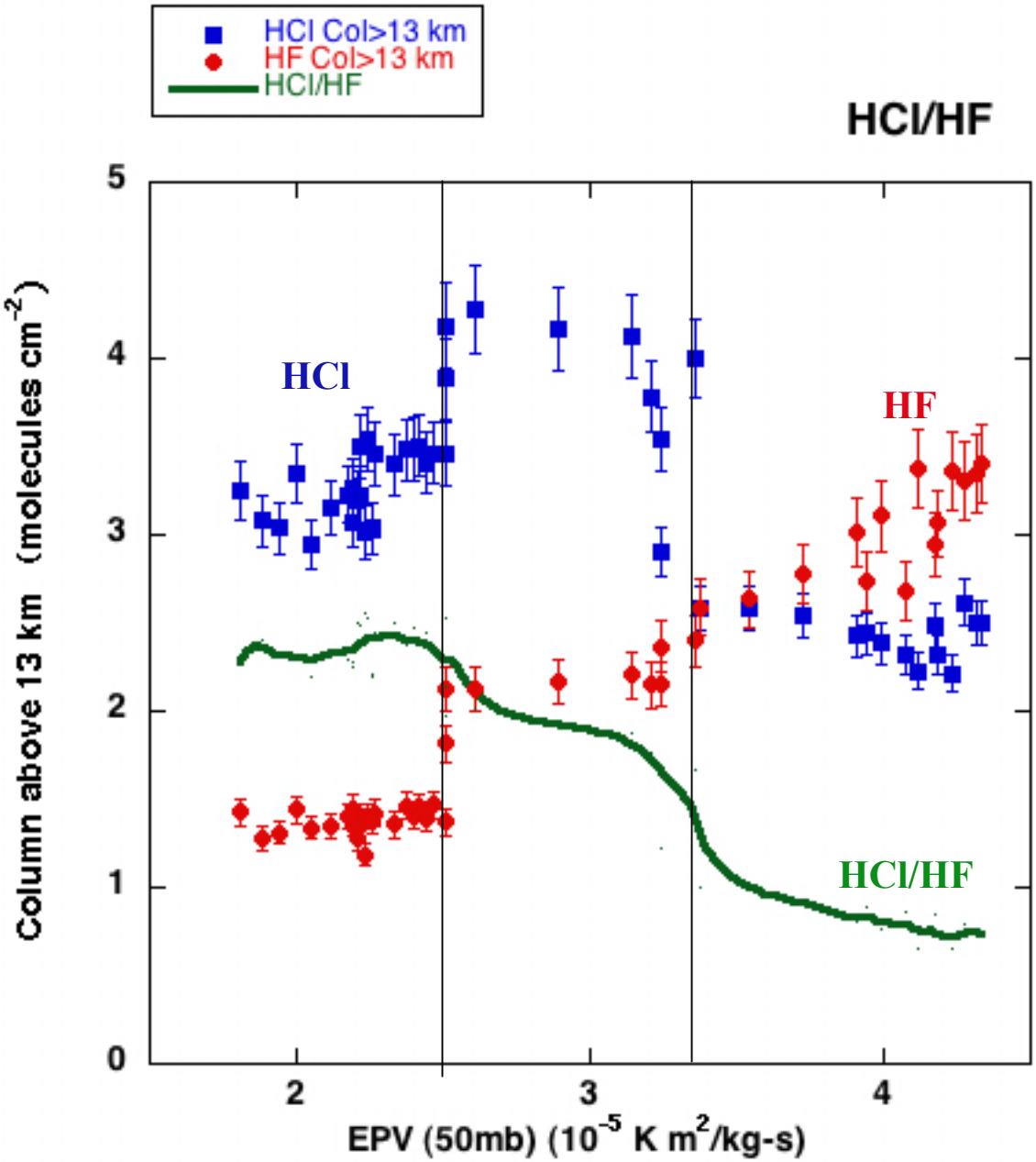
130 km is about 1.2 degrees of latitude,
View is generally southward from aircraft



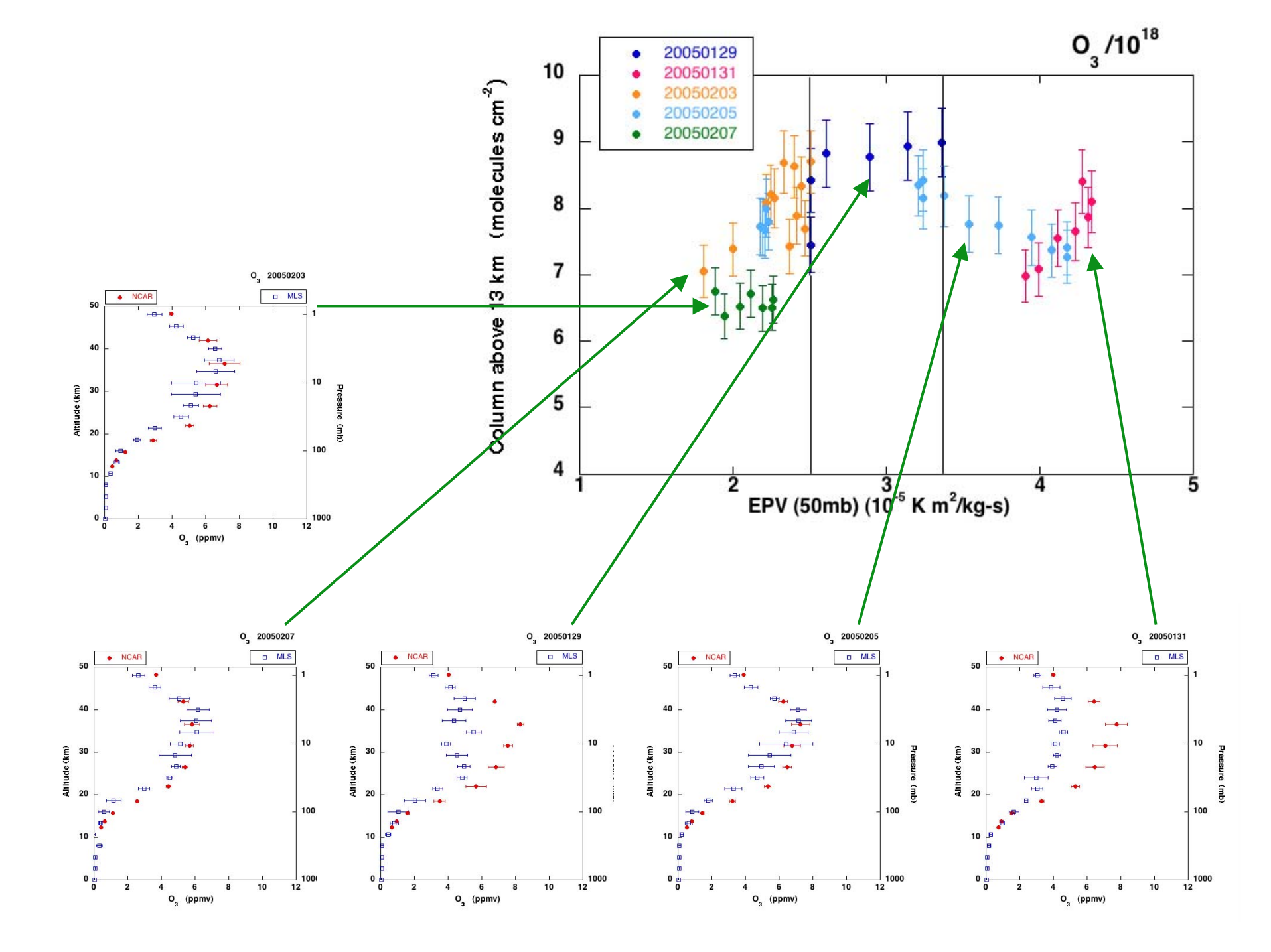
MLS track and view direction

FTS track and view direction


QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.



EPV (50mb) from GSFC XSxxxx data files


20050129
20050131
20050203
20050205
20050207
O3 /10^18
Column above 13 km (molecules cm^-2)
EPV (50mb) (10^-5 K m^2/kg-s)
O3 20050203
NCAR
MLS
Altitude (km)
Pressure (mb)
O3 (ppmv)
O3 20050207
O3 20050129
O3 20050205
O3 20050131

Gases to be Measured by Aura

HIRDLS	O_3 H_2O CH_4 N_2O HNO_3 N_2O_5 CCl_3F CF_2Cl_2 $ClONO_2$
MLS	H_2O O_3 ClO BrO HCl OH HO_2 HNO_3 HCN N_2O CO HOCL CH_3CN
OMI	O_3 NO_2 SO_2 BrO OClO HCHO
TES	O_3 NO_2 CO HNO_3 CH_4 H_2O *

Measured by NCAR FTS

Underlined available Sept 2005
GSFC DAAC or LaRC ASDC